

## **REMARKS**

### **The Amendments**

The claims have been amended to recite that the non-combustible tubular element of the device has a (proximal) tip end and an open (distal) end. This amendment is supported by Figs. 1-17, 19-20, and 22, and related text in the specification.

Applicants respectfully submit that the amendments add no new matter to the application. Applicants earnestly solicit entry of the amendments.

### **The Invention**

The invention is directed to a device for minimizing cigarette sidestream smoke and reducing the free-burn rate of a burning cigarette. The device comprises a non-combustible tubular element encasing an effective length of a tobacco charge of a cigarette in the tubular element. The tubular element has a proximal tip end and an open distal end.

In one embodiment, the tubular element comprises ceramic material and has a predetermined number of pores and predetermined pore sizes for both minimizing sidestream smoke emission from a burning tobacco charge and restricting inward air flow to reduce free-burn rate of the burning tobacco charge to increase the number of puffs therefrom.

In another embodiment, the tubular element consists essentially of a porous ceramic material for both minimizing sidestream smoke emission from a burning tobacco charge and reducing free-burn rate of the burning tobacco charge to increase the number of puffs therefrom.

**The Office Action**

Both claims stand rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over, Valdez, United States Patent Number 4,685,477.

Claims 10 and 11 also stand rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as unpatentable over, JP06-052497.

**The Cited Documents**

Valdez, United States Patent Number 4,685,477, is directed to a device that assists a smoker in holding a cigarette or cigar during smoking. The device, which comprises a tubular member having three chambers, serves as a tubular smoke absorbent filter. Valdez requires that the distal end (as defined herein) be covered with end plate 21. End plate 21 is illustrated in Figs. 3 – 5 of Valdez, and is described in the specification at column 2, lines 28-35 (in conjunction with the ash chamber); and as “end plate 21” (column 3, line 53), which is at “second end 13” (column 3, line 1, and Fig. 3); “The end plate serves to essentially plug or occlude the second end of the tubular member (column 3, lines 55-56); “second end 13’ may be at least partially occluded by an end plate 21’, except that air intake spaces 22’ may be located therein.” (column 5, lines 33-35); and “the filter cartridge may further be comprised of filter material which occludes the second end, thereby eliminating the need for the tubular members and end plates previously described.” (column 6, lines 3-7). Thus, the tube is occluded at the end with a plate or filter-type material.

JP '497 discloses a mouthpiece into which a cigarette or tube of tobacco is inserted. A cylindrical tube is concentric with the longitudinal axis of the cigarette. The tube comprises

porous glass, for example, and a fiber filter is inserted in the mouthpiece to be disposed between the mouth of the smoker and the cigarette. The tube may be essentially adjacent to the tobacco charge, or may be spaced away.

The glass tube does not restrict airflow. JP '497 discloses compositions, specific surface areas, pore volume, and pore diameter, as appropriate, that achieve these purposes. The pores in the tube are venting holes selected for ventilation.

**The Invention in view of the Cited Documents**

Claims 10 and 11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over, Valdez. The claims also stand rejected on the same bases over JP '497. The claimed invention also is rejected as inherently disclosed by either patent. Applicants respectfully traverse these rejections. Not only do these documents not disclose, inherently or *in haec verba*, the embodiments claimed, but also they do not suggest the embodiments claimed.

**Valdez**

Valdez requires an end plate that cooperates with the rest of the device to form a chamber for ashes. Valdez repeatedly describes the end plate and the requirement that the end (whether called the second end or the distal end) be occluded, for example to form an ash chamber, by a plate or other material sufficient to occlude the second, distal end.

Therefore, applicants respectfully submit that Valdez does not disclose the embodiments claimed herein, which are open at the end at which Valdez requires occlusion. Applicants also submit that Valdez cannot inherently disclose an open-ended device claimed herein, as Valdez requires an end plate or occlusion.

Valdez cannot be said to suggest the open-ended device claimed herein. There is no suggestion, and there cannot be a suggestion, relating to an open-ended device, as are the embodiments claimed herein. Valdez discloses only devices with an end plate or other occlusion of the distal end.

For at least these reasons, Claims 10 and 11 are patentable over Valdez.

**JP '497**

Applicants respectfully traverse the rejections over JP '497. JP '497 does not disclose the claimed invention, whether *in haec verba* or inherently, and certainly does not suggest the claimed invention. As described below, Applicants respectfully traverse these rejections.

For example, at paragraphs [0010-11] of JP '497, the encasing section 2 of porous glass is described as having the following properties and characteristics:

Pore size: 0.05 to 15.0  $\mu\text{m}$

BET Specific Surface Area: 0.1 to 4.0  $\text{m}^2/\text{g}$

Pore cubic capacity: 0.4 to 0.6  $\text{cm}^3/\text{g}$

This porous glass is favored from the viewpoint of ventilation.

Applicants respectfully submit that the assertion in the Office Action that JP '497 describes encasing section 2 as comprising fine pores 8 that allow restriction of the inflow of air to thus reduce the free-burn rate of the burning tobacco is not well-founded. Applicants respectfully submit that the JP '497 reference describes at paragraph [0012] that “oxygen is supplied through venting holes opened all over the surface of the encasing section 2, so the cigarette can stay lit while installed in the encasing section 2”. Applicants respectfully submit that one skilled in the art would not interpret this recitation as restricting the inflow of air to thus reduce the free-burn rate of the burning tobacco. In contrast, JP '497 is ensuring that the

cigarette will stay lit when the cigarette is not being smoked. JP '497 does not discuss a reduced free-burn rate at all.

This argument is not directed to the function of the holes. Rather, this argument is directed to the porosity of the encasing section to illustrate that the encasing section is not the same physical construction as the embodiments claimed herein. As further supported at paragraphs [0010]-[0011], the porous glass (e.g., the encasing section 2), having the following recited characteristics, is favored from the viewpoint of ventilation:

**Encasing Section 2 of Cited Reference JP '497**

Avg. Pore Size	0.5 - 15 $\mu\text{m}$
BET Specific Surface Area	0.1 - 4 $\text{m}^2/\text{g}$
Specific Pore Volume	0.4 - 0.6 $\text{cm}^3/\text{g}$

Moreover, as set forth at paragraphs [0009]-[0010], JP '497 discloses that the other portion of the smoking pipe has a filter 4, which is made of porous glass fiber (this is not the tube but the filter between the smoker and the tobacco charge; this section is for filtering mainstream smoke only) and is provided in the holding section 5. The porous glass fiber of the filter 4 has the recited characteristics:

**Filter 4 of Cited Reference JP '497**

BET Specific Surface Area	400 $\text{m}^2/\text{g}$ or more
Avg. Pore Size	50 $\text{\AA}$ or less
Specific Pore Volume	0.4 - 0.6 $\text{cm}^3/\text{g}$

Comparison of the encasing section 2 of the cited reference with the filter 4 of the cited reference clearly illustrates a large difference between the filtration characteristics of the filter 4

and the ventilation characteristics of the encasing section 2 of the cited reference. JP '497 clearly is choosing different characteristics, and therefore, different constructions, for filter 4 as compared to encasing section 2. The characteristics of the filter 4 were chosen by the inventor to ensure sufficient filtration, therefore low ventilation, in order to treat mainstream smoke. In contrast, the characteristics of the encasing section 2 were chosen by the inventor of JP '497 to ensure high ventilation and to ensure that the encasing section 2 does not interfere with the burning of the cigarette. The inventor of JP '497 discloses pores large enough (0.05-0.15  $\mu\text{m}$ ) are provided all over the surface of encasing section 2 to achieve free ventilation to ensure that the cigarette is burning. In this way, the presence of encasing section 2 does not have an effect on the burning of the cigarette itself. Applicants respectively reiterate that JP '497 does not discuss a reduced free-burn rate at all.

The encasing section 2 of the cited reference and the tubular element of embodiments of the claims are very different. The porosity of the tubular element of the claimed invention restricts flow. In contradistinction, the encasing section 2 of the cited reference does not minimize sidestream smoke because the pores are so large. Also, the cited document describes at paragraph [0012] that "oxygen is supplied through venting holes opened all over the surface of the encasing section 2, so the cigarette can stay lit while installed in the encasing section 2".

The structure of JP '497 ensures that the pores are large enough (0.05-0.15  $\mu\text{m}$ ) and are provided all over the surface of the encasing section 2 to ensure that the cigarette is burning. Thus, the presence of the encasing section does not have an effect on the burning of the cigarette. Importantly, JP '497 does not discuss a reduced free-burn rate at all. Therefore, the structures of the encasing section 2 of the cited reference and the tubular element of the claimed invention are quite different.

Properties and characteristics of some examples of the tubular element of the claimed embodiment are shown below in comparison with the encasing section 2 of the cited reference and in comparison to the filter 4 of the cited reference (Remember: filter 4 is solely used to reduce mainstream smoke only):

	<b>Tubular Element</b>	<b>Encasing Section 2 of Cited Reference</b>
BET Specific Surface Area	5 - 230 m <sup>2</sup> /g	0.1 - 4 m <sup>2</sup> /g
Avg. Pore Size	0.0013 – 0.012 µm (13-120 Å)	0.5 - 15 µm (5,000-150,000 Å)
Specific Pore Volume	0.09 - 0.16 cm <sup>3</sup> /g	0.4 - 0.6 cm <sup>3</sup> /g

	<b>Tubular Element</b>	<b>Filter 4 of Cited Reference</b>
BET Specific Surface Area	5 - 230 m <sup>2</sup> /g	400 m <sup>2</sup> /g
Avg. Pore Size	13-120 Å	50 Å or smaller
Specific Pore Volume	0.09 - 0.16 cm <sup>3</sup> /g	0.4 - 0.6 cm <sup>3</sup> /g

As is shown, the porosity properties and characteristics of the tubular element of the claimed invention are similar to the filter 4 of the cited reference, where JP '497 uses such properties and characteristics to filter mainstream smoke only. Consequently, the porosity characteristics of the tubular element, and hence the structure, of the claimed invention are much different from the properties and characteristics, and hence the structure, of the encasing section 2 of JP '497.

The importance of this disclosure is that the pores of the glass tube of the cited reference are far too large to disclose, inherently or otherwise, or to suggest, the claimed embodiment.

The encasing section 2 of the cited reference was chosen to be porous, whereas the porosity of the tubular element of the embodiments of the claims is not large. Based on the teachings of the cited reference, one skilled in the art would not attempt to achieve the porosity of the claimed invention since the cited reference clearly teaches that it is concerned about the cigarette remaining lit. Moreover, the inventor of the cited reference was completely aware of the lower porosity with respect to the filter 4 and chose not to use such a porosity with encasing section 2. Therefore, the skilled practitioner would not consider lowering the porosity of the tube of JP '497 as JP '497 teaches not to affect the burning of the cigarette, as JP '497 wants to achieve normal ventilation. Thus, JP '497 teaches away from the claimed invention.

Consequently, the porosity properties and characteristics of the tubular element of the claimed invention are much different than those of the encasing section 2 of the cited reference. The porosity of the tubular element is much lower than that of the encasing section 2 of the cited reference. The pores of the glass tube of the cited reference are far too large to reduce the rate of combustion through the encasing section 2, as compared to the tubular element of the claimed invention. Moreover, the pores of the glass tube of the cited reference are far larger than those of the embodiments of the claims herein.

The Office Action invokes inherency. However, as set forth above, the structures are different. Applicants respectfully submit that the inherency rejections are not well-founded for at least the reasons set forth above. The Office Action identifies 'porosity' and asserts that such porosity must therefore inherently have the same structure that the claimed invention has. However, this position fails to appreciate that 'porosity' is demonstrably and significantly different between JP '497 and the embodiments of the claims. This porosity has different properties and characteristics, and hence structure, from the porosity having the properties and

characteristics claimed herein, as the documents themselves illustrate. Thus, the invention is not inherently disclosed in either of the cited documents.

## **CONCLUSION**

Applicants respectfully submit that the Office Action is based on assertions that are not well-founded and are indeed contrary to the teachings of the cited art, Valdez and JP '497. The structures of the claimed invention are different from those of Valdez and JP '497. For at least the reasons set forth herein, Applicants respectfully traverse the rejections of claims 10 and 11.

Respectfully submitted,

BANNER & WITCOFF, LTD.

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By: /William J. Fisher/  
William J. Fisher  
Registration No. 32,133

1100 13<sup>th</sup> Street, N.W.  
Washington, D.C. 20005-4051  
Tel: (202) 824-3000  
Fax: (202) 824-3001

***Customer No. 22907***

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